Killeen Firefighter's Relief and Retirement Fund

Actuarial Valuation as of September 30, 2020

December 14, 2021

Rudd and Wisdom, Inc.

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December 14, 2021

Board of Trustees
Killeen Firefighter's Relief and
Retirement Fund
c/o Ms. Jennifer Hanna, Administrator
Post Office Box 497
Conroe, TX 77305

Members of the Board of Trustees:

At the request of the Board of Trustees of the Killeen Firefighter's Relief and Retirement Fund, we have prepared this report of the results of the actuarial valuation of the fund as of September 30, 2020. This valuation was prepared to determine whether the fund has an adequate contribution arrangement.

In a separate report dated April 15, 2021, we provided the necessary disclosures for the fund's compliance with the Governmental Accounting Standards Board (GASB) Statement No. 67 for the plan year ending September 30, 2020. Similarly, we provided a separate report dated January 4, 2021 containing the pension expense, net pension liability, and disclosure information for the city's compliance with GASB 68 for the fiscal year ending September 30, 2020. GASB 68 prescribes the city's accounting for your fund, while this actuarial valuation report reflects the assumed continuation of the new contribution policy.

We certify that we are members of the American Academy of Actuaries who meet Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report.

Sincerely,

Mark R. Fenlaw

Mark R. Fenlaw, F.S.A.

Rebecca B. Morris

Rebecca B. Morris, A.S.A.

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Section I

Valuation Summary

An actuarial valuation of the assets and liabilities of the Killeen Firefighter's Relief and Retirement Fund as of September 30, 2020 has been completed. The valuation was based on the Present Plan (plan effective January 1, 2019) and the provisions of the Texas Local Fire Fighters' Retirement Act (TLFFRA) which were in effect on September 30, 2020. Section II shows the summary of key results of the actuarial valuation as of September 30, 2020 and discusses the significant changes since the prior valuation that we prepared as of September 30, 2018.

This valuation reflects an actuarially assumed total contribution rate of 26%, comprised of 11% by the firefighters and 15% by the city. The total contribution rate of 26% exceeds the normal cost rate of 17.43%, leaving 8.57% available to amortize the unfunded actuarial accrued liability (UAAL) of $21,330,802. Assuming that the total payroll increases at the rate of 2.75% per year in the future, the contributions in excess of the normal cost **will amortize the UAAL in 28.4 years.**

In order for a retirement plan to have an adequate contribution arrangement, contributions must be made that are sufficient to pay the plan's normal cost and to amortize the plan's UAAL over a reasonable period of time. Based on the Texas Pension Review Board guidelines for pension funding, our professional judgment, and the actuarial assumptions and methods used in making this valuation, we consider periods of 10 years to 25 years to be preferable and 40 years to be the current maximum acceptable period. The PRB guidelines will be changing to a maximum of 30 years in 2025. Since the total contributions are sufficient to pay the fund's normal cost and to amortize the fund's UAAL within the maximum acceptable period, we are of the opinion that the fund, based on present levels of benefits and contributions, **has an adequate contribution arrangement. Section III presents considerations for future benefit improvements.**

Projected Actuarial Valuation Results

In addition to completing this actuarial valuation, we estimated the amortization periods as of September 30, 2022 and as of September 30, 2024 by making projections from the September 30, 2020 actuarial valuation. These projections examine the effect on the amortization period in the next two actuarial valuations of the actuarial investment gains and losses that the fund experienced in the four years prior to the valuation date (gains in 2017, 2018, and 2020 and a loss in 2019) that have been only partially recognized as of September 30, 2020. As shown in Exhibit 8, a smoothing method is used to determine the actuarial value of assets (AVA) for this valuation. This method phases in over a five-year period any investment gains or losses (net actual investment return greater or less than the actuarially assumed investment return) that the fund has had. The AVA used in

this current valuation is deferring recognition of various portions of the gains and the loss in 2017-2020 that the fund experienced. The AVA used in this valuation is $50,538,707. The market value of assets (MVA) is $50,912,599. The $373,892 difference between the MVA and the AVA is the deferred net gain that will be recognized in the next two actuarial valuations.

The theory behind the AVA method is to allow time for investment gains and losses to partially offset each other and thereby dampen the volatility associated with the progression of the MVA over time. In practice, the timing and amounts of investment gains and losses can result in irregular effects on the AVA in a given year. However, as intended, the pattern of the AVA is smoother over time than the pattern of the market value of assets, as seen in Exhibit 9.

For the purpose of projecting the amortization period through 2024 we used several scenarios of various assumed annual rates of investment return, net of investment-related expenses, over the 2021-2024 projection period. These projections show the expected effects over the next four years after the valuation date (1) of the recognition of the portions of the past investment gains and loss over the past four years that are deferred as of September 30, 2020, and (2) of investment returns over the next four years different from the 7.25% assumption used in this valuation.

	Scenario					
	1	2	3	4	5	6
Assumed Investment Return for Fiscal Year						
2020-2021	7.25%	16.00%	16.00%	16.00%	16.00%	16.00%
2021-2022	7.25	7.25	10.00	0.00	4.00	-4.00
2022-2023	7.25	7.25	7.25	7.25	4.00	10.00
2023-2024	7.25	7.25	7.25	7.25	4.00	10.00
2024-2025 and later	7.25	7.25	7.25	7.25	7.25	7.25
Amortization Period in Years as of September 30:						
2020 (actual)	28.4	28.4	28.4	28.4	28.4	28.4
2022 (projected)	25.7	21.4	20.8	23.1	22.2	24.0
2024 (projected)	23.4	16.0	14.3	21.0	20.3	22.2

The projected future September 30, 2024 valuation in Scenario 1 reveals that the amortization period is projected to decrease by 5 years instead of the expected 4 year reduction to 24.4. This is the result of the deferred net gain of $373,892 that the fund has as of September 30, 2020. However, we already know that the fund earned more than the assumed 7.25% in the year ending September 30, 2021. Scenarios 2-6 include an estimated return of 16% for that year. The primary conclusion from Scenario 2 is that the significant favorable investment experience in the FY2020-2021 will greatly accelerate

the reduction in the amortization period. Scenarios 2-6 illustrate a variety of investment results in the years after FY2020-2021. The projected amortization periods show the fund in a stronger position in the next two actuarial valuations than the 28.4-year unfunded liability pay off period in this actuarial valuation.

We do not know what the investment experience will be for each of the next three fiscal years. In addition, variations in experience from the underlying assumptions, other than investment return, will cause the actual amortization periods to be different from the periods shown above. The future investment experience in each of the next three fiscal years could be better or worse than the assumed rates shown. These scenarios present a range of plausible scenarios for the next two valuations assuming no changes in contribution rates or benefits.

The primary conclusion from the scenarios is that since the fund has an adequate contribution arrangement and the potentially favorable results in the next actuarial valuation, the board should consider what the future might include for managing the fund wisely. We address this subject in more detail in Section III.

Participant and Asset Data

We have relied on and based our valuation on the active firefighter data, pensioner data, and asset data provided on behalf of the board of trustees by Ms. Jennifer Hanna, plan administrator for the board. We have not audited the data provided but have reviewed it for reasonableness and consistency relative to the data provided for the September 30, 2018 actuarial valuation. Exhibit 1 is a distribution of the active firefighters by age and service. The assumed compensation amounts used for projecting future contributions and benefits in the valuation were based on the actual pay for the 2020 plan year increased to reflect the general pay increases in October 2020 that varied by rank. The total of these assumed compensation amounts is our assumed annual covered payroll for the plan year beginning October 1, 2020 and is used in the valuation to determine the UAAL amortization period. The averages of the assumed compensation for the 2020-2021 plan year are shown in Exhibit 1.

Exhibit 2 contains summary information on the pensioners. The monthly benefit payments are generally based on the amounts paid October 31, 2020. Exhibit 3 is a reconciliation of firefighters and pensioners from September 30, 2018 to September 30, 2020. Exhibit 4 shows a breakdown of the dollar level of the monthly benefits for retirees and surviving spouses. Exhibit 5 shows a historical comparison of the actuarial accrued liability and the actuarial value of assets.

The summary of assets contained in Exhibit 6 is based on the September 30, 2020 audited market value of assets shown in the fund's financial statements. This exhibit also shows a comparison of the market values and actuarial values of assets as of September 30, 2018 and September 30, 2020. Exhibit 7 contains the statement of changes in assets for

fiscal years ending September 30, 2020 and September 30, 2019. Exhibit 8 shows the development of the actuarial value of assets. Exhibit 9 shows a historical comparison between the market value and actuarial value of assets. A comparison of the market value asset allocation by asset class as of September 30, 2018 and September 30, 2020 is shown in Exhibit 10.

Assumptions

As a part of each actuarial valuation, we review the actuarial assumptions used in the prior actuarial valuation. As a result of our review, we have selected actuarial assumptions we consider to be reasonable and appropriate estimates of future experience for the fund for the long-term future. Their selection complies with the applicable actuarial standards of practice. Significant actuarial assumptions used in the valuation are:

1. 7.25% annual investment return net of investment-related expenses;
2. 2.75% annual general compensation increase combined with promotion, step, and longevity increases that average 1.97% per year over a 30-year career;
3. Retirement rates which result in an average expected age at retirement of 55.2; and
4. PubS-2010 below-median income mortality tables projected for mortality improvement using scale MP-2018.

The following actuarial assumption changes have been made, and the new assumptions are compared to those used in the September 30, 2018 valuation:

1. The investment return assumption was changed from 7.5% net of investment-related expenses to 7.25% net of investment-related expenses. We made this change by lowering the assumed inflation component of the investment return assumption rate from 3% to 2.75%.
2. We changed the assumed general compensation increase from 3% per year to 2.75%, making it the same as the underlying price inflation assumption. As a result, we also changed the aggregate payroll increase assumption from 3% per year to 2.75%. We think that reducing the long-term assumed rate of inflation is appropriate. See our review of the inflation assumption in Appendix A.
3. We lowered the assumed administrative expenses paid from the fund from 0.85% of payroll to 0.80% of payroll based on the average of the last four plan years as shown in Appendix A.

The effects of these changes in assumptions on the UAAL and on the UAAL amortization period are identified in Section II. A summary of all the assumptions and methods used in the valuation is shown in Exhibits 11 and 12. In our opinion, the assumptions used, both in the aggregate and individually, are reasonably related to the

experience of the fund and to reasonable expectations. The assumptions represent a reasonable estimate of anticipated experience of the fund over the long-term future.

Changes in Plan Provisions and Contribution Policy

The only substantive change in the Present Plan (plan effective January 1, 2019) is the exclusion of deployment pay received after January 1, 2019 for disaster response services outside of the City of Killeen for determining benefits and contributions. This change was reflected in the September 30, 2018 actuarial valuation.

The city agreed to a new contribution policy of contributing 15% of covered payroll, a significant increase from the previous policy of contribution 13% of covered payroll for many years. The 15% rate was effective October 1, 2020 and has a very significant effect on the key result of this actuarial valuation, the UAAL amortization period, as shown in Section II.

Supporting Exhibits

Exhibit 13 contains definitions of terms used in this actuarial valuation report. Exhibit 14 summarizes the plan provisions of the Present Plan. Appendix A summarizes our review of the economic assumptions.

Funding Policy

The funding policy adopted by the board of trustees effective December 20, 2019 says that each actuarial valuation report will include a benchmark actuarially determined contribution (ADC) rate using a closed amortization period of 30 years beginning with the first actuarial valuation completed after January 1, 2020, which is as of September 30, 2020. Then the fund's actuary is to compare the benchmark ADC rate and the actuarial valuation results in the two key metrics, the amortization period and the total contribution rate.

	Amortization Period	Total Contribution Rate
Benchmark ADC rate	30.0 years	25.76%
Actuarial valuation	28.4 years	26.00%
Difference	-1.6 years	+0.24%

The actuarially determined amortization period in this actuarial valuation of 28.4 years is somewhat less than the 30-year amortization period in the benchmark ADC rate. The total contribution rate reflected in this actuarial valuation of 26.0% is slightly more than the benchmark ADC rate of 25.76. Therefore, there is a positive divergence between the total anticipated contribution rate in this actuarial valuation and the cost of the benefits as

measured by the benchmark ADC rate. Even though there is a positive divergence from the benchmark ADC rate, there is not enough of a divergence to indicate any changes in benefits. Further, the city contribution policy was just recently changed to contribute 15% to the Fund in order to strengthen the financial condition of the Fund. The PRB pension funding guidelines say that any increase in benefits should result in an amortization period of no more than 25 years. In addition, we believe the resulting amortization period should be lower than 25 years. See Section III.

Variability in Future Actuarial Measurement

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- Plan experience differing from that anticipated by the current economic or demographic assumptions;
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements;
- Changes in economic or demographic assumptions; and
- Changes in plan provisions.

Analysis of the potential range of such future measurements resulting from the possible sources of measurement variability was provided on pages 1-3 in the projected amortization periods for the next two biennial actuarial valuations under six scenarios. These projections were designed to assess the risk of variance of potential future investment rates of return in the four years following the actuarial valuation date from the assumed 7.25% rate and the potential effect on the amortization period. Additional or other sensitivity analysis could be performed in a subsequent report if desired by the board of trustees.

Respectfully submitted,
RUDD AND WISDOM, INC.

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Section II

Key Results of the Actuarial Valuation

	September 30, 2018[1]	September 30, 2020
1. Actuarial present value of future benefits		
a. Those now receiving benefits or former firefighters entitled to receive benefits	$ 29,393,624	$ 32,238,015
b. Firefighters	60,546,635	69,163,083
c. Total	$ 89,940,259	$ 101,401,098
2. Actuarial present value of future normal cost contributions	$ 27,978,922	$ 29,531,589
3. Actuarial accrued liability (Item 1c – Item 2)	$ 61,961,337	$ 71,869,509
4. Actuarial value of assets	$ 42,970,465	$ 50,538,707
5. Unfunded actuarial accrued liability (UAAL) (Item 3 - Item 4)	$ 18,990,872	$ 21,330,802
6. Contributions (percent of payroll)		
a. Firefighters	11.00%	11.00%
b. City of Killeen	13.00%	15.00%
c. Total	24.00%	26.00%
7. Normal cost (percent of payroll)	17.02%	17.43%
8. Percent of payroll available to amortize the UAAL (Item 6c - Item 7)	6.98%	8.57%
9. Annualized covered payroll	$ 14,453,300	$ 15,387,077
10. Years to amortize the UAAL	39.8	28.4
11. Funded ratio (Item 4 ÷ Item 3)[2]	69.4%	70.3%

[1] All items are from the September 30, 2018 actuarial valuation and reflect the Present Plan.

[2] The funded ratio is not appropriate for assessing either the need for or the amount of future contributions or the adequacy of the assumed contribution rates. Using the market value of assets instead of the actuarial value of assets for Item 11 would have resulted in funded ratios of 70.9% as of September 30, 2018 and 70.8% as of September 30, 2020. **The best indicator of the fund's health is item 10.**

Changes in the Unfunded Actuarial Accrued Liability

In comparing this actuarial valuation to the prior one, the UAAL increased by $2,339,930 from $18,990,872 as of September 30, 2018 to $21,330,802 as of September 30, 2020. The table below summarizes the reasons for the increase.

Reason for Change	Amount
• Expected increase (interest on UAAL greater than assumed amortization payments accumulated with interest)	$ 756,231
• Investment loss for the two years (based on the AVA average annual return of 7.4%)	133,658
• Experience gain (net difference between actual experience and assumed experience for contributions, pay increases, retirements, mortality, and terminations)	(564,715)
• Change in assumptions (net effect of all changes)	2,014,756
Total	$ 2,339,930

Changes in the Amortization Period

The amortization period, based on the Present Plan provisions, was determined in the actuarial valuation as of September 30, 2018 to be 39.8 years. Since two years have passed since that valuation date, a 37.8-year amortization period would be expected if all actuarial assumptions had been exactly met, no changes had occurred (other than those expected) in the firefighter and pensioner data, and no changes in assumptions or contribution rates had been made. The amortization period is now 28.4 years based on the same plan provisions. The actual experience occurring between September 30, 2018 and September 30, 2020 differed from the expected experience. In addition, there were changes in the city contribution rate and in assumptions, resulting in the amortization period being 28.4 years, which is 9.4 years less than the expected 37.8-year period for the following reasons:

1. The average annual rate of investment return, net of investment-related expenses, on the market value of assets during the two plan years ending in 2019 and 2020 was 6.6%. However, the actuarial value of assets (AVA) used in the valuation and the determination of the amortization period is based on an adjusted market value. The average annual rate of return on the AVA, net of investment-related expenses, for plan years ending in 2019 and 2020 was 7.4%, less than the assumed rate of return for

those years of 7.5%. This resulted in an **increase** in the amortization period of 0.7 of a year.

2. The aggregate payroll increased at an average rate of 3.2% per year instead of the assumed 3.0% per year rate, which caused the amortization period to **decrease** by 0.3 of a year.

3. The net result of all experience other than the investment experience and the aggregate payroll experience had the combined effect of **decreasing** the amortization period by 2.3 years.

4. The changes in the economic assumptions (investment return, general compensation increase, aggregate payroll increase, and administrative expenses) had the effect of **increasing** the amortization period by 6.4 years.

5. The increase in the assumed city contribution rate from 13% to 15% had the effect of **decreasing** the amortization period by 13.9 years.

Section III

Future Benefit Improvements

The results of this actuarial valuation as of September 30, 2020 reveal that the fund, based on the Present Plan of benefits, has an adequate contribution arrangement. As disclosed in both Sections I and II, the amortization period of the UAAL is 28.4 years. We cannot approve any benefit improvement at this time due to the level of the amortization period in this actuarial valuation. In order for benefit improvements to be made to the plan, they must be made in accordance with Section 7 of TLFFRA, which includes approval by the board's actuarial firm.

The Texas Pension Review Board (PRB) pension funding guidelines say that any increase in benefits should result in an amortization period of no more than 25 years. We believe that the resulting amortization period should be lower than 25 years and that it would be possible to coordinate periodic benefit improvements with a gradual lowering of the benefit improvement cap on the UAAL amortization period to a long-term goal such as 15 years.

The PRB changed its preferred range from 25-to-30 years to 15-to-25 years in 2011 and to 10-to-25 years in 2017. A number of years ago we began encouraging our TLFFRA clients to think about a gradual lowering of the threshold for benefit improvements. We are presenting this strategy again for your long-term planning primarily for the following reasons:

1. The current Texas Pension Review Board (PRB) guidelines for pension funding,
2. The change that the PRB made in 2017 to decrease the maximum acceptable number of years to amortize the UAAL from 40 years to 30 years effective in 2025, and
3. The increasing scrutiny of public employee pension plans.

We propose that the maximum threshold for future benefit improvements be lowered below 25 years in increments of two years until a long-term goal of a maximum threshold of 15 years is reached. This approach would allow for periodic benefit improvements while gradually strengthening the actuarial condition of the fund and better preparing for the possibility of adverse experience to the fund in the future. The stronger actuarial condition of the fund would be demonstrated by the progressively lower UAAL amortization period for periodic benefit improvements.

In addition, we recommend that the definition in the plan provisions for determining the Highest 60-Month Average Salary be changed to be based on the highest 130 ***consecutive*** biweekly pay periods. Unscheduled overtime and other pay practice changes can significantly impact certain biweekly periods which would in turn increase the future retirement benefits. We recommend this change be made in order to prevent a 'spiking' effect that would inflate benefits and to improve the benefit design of the plan.

Exhibit 1

Distribution of Firefighters by Age and Service on September 30, 2020 with Average Annual Salary

Years of Service	Age									Total	Average Salary
	Under 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60 or Over		
0	3	3	4	1	0	0	0	0	0	11	$46,000
1	8	7	4	2	0	0	0	0	0	21	48,857
2	2	7	3	0	0	0	0	0	0	12	51,081
3	2	6	4	2	0	0	0	0	0	14	55,064
4	2	8	9	4	0	0	0	0	0	23	58,386
5	0	1	2	2	0	0	0	0	0	5	61,944
6	0	3	2	4	1	0	0	0	0	10	64,723
7	0	1	0	1	1	0	0	0	0	3	65,697
8	0	1	2	2	1	0	0	0	0	6	63,917
9	0	0	3	3	2	0	0	0	0	8	71,674
10	0	0	1	0	0	0	0	0	0	1	68,684
11	0	0	3	1	2	0	0	0	0	6	71,538
12	0	0	1	3	1	0	0	0	0	5	69,299
13	0	0	3	6	6	2	0	0	0	17	73,596
14	0	0	3	6	4	5	0	0	0	18	77,447
15	0	0	3	4	5	1	0	0	0	13	80,904
16	0	0	0	5	2	0	0	0	0	7	78,277
17	0	0	0	1	2	1	0	0	0	4	84,002
18	0	0	0	2	2	2	0	0	0	6	85,872
19	0	0	0	1	2	1	2	0	0	6	84,948
20-24	0	0	0	0	6	8	3	1	0	18	94,867
25-29	0	0	0	0	0	3	4	1	0	8	94,873
30-34	0	0	0	0	0	0	0	1	0	1	100,620
35+	0	0	0	0	0	0	0	0	0	0	0
Totals	17	37	47	50	37	23	9	3	0	223	$69,000
Average Salary	$51,079	$54,506	$62,681	$70,040	$78,822	$89,039	$90,923	$90,470			

Average age	35.8
Average years of service	10.1
Average age at hire	25.7

Exhibit 2
Summary of Pensioner Data

Type of Benefit	Pensioner Data Used in September 30, 2020 Valuation	
	Number of Recipients	Total Monthly Benefit Payments
Paid Firefighter Pensioners		
Service Retirement	59	$ 203,962
Disability Retirement	0	0
Vested Terminated (Deferred)	13	27,506
Surviving Spouse	10	18,403
Surviving Child	0	0
Total	82	$249,871
Volunteer Firefighter Pensioners		
Service Retirement	2	$ 310
Disability Retirement	0	0
Vested Terminated (Deferred)	0	0
Surviving Spouse	4	428
Surviving Child	0	0
Total	6	$ 738
Total Pensioners	88	$ 250,609

Type of Benefit	Comparison of Pensioner Count by Type as of The Prior and Current Actuarial Valuations			
	September 30, 2018	New	Ceased	September 30, 2020
Paid Firefighter Pensioners				
Service Retirement	57 [1]	+5 [2]	-3	59 [3]
Disability Retirement	0	0	0	0
Vested Terminated (Deferred)	10	+3	0	13
Surviving Spouse	9	+2	-1	10
Surviving Child	0	0	0	0
Total	76	+10	-4	82
Volunteer Firefighter Pensioners				
Service Retirement	3	0	-1	2
Disability Retirement	0	0	0	0
Vested Terminated (Deferred)	0	0	0	0
Surviving Spouse	3	+1	0	4
Surviving Child	0	0	0	0
Total	6	+1	-1	6
Total Pensioners	82	+11	-5	88

[1] Includes four alternate payees according to the terms of a QDRO for a retired member.
[2] Includes two alternate payees according to the terms of a QDRO for a retired member.
[3] Includes six alternate payees according to the terms of a QDRO for a retired member.

Exhibit 3

Firefighter and Pensioner Reconciliation

	Firefighters	Current Payment Status	Vested Terminated Firefighters	Total
1. As of September 30, 2018	225	72 [1]	10	307
2. Change of status				
a. retirement	(3)	3	0	0
b. disability	0	0	0	0
c. death	0	(5)	0	(5)
d. survivor payment begins	0	3	0	3
e. withdrawal	(30)	0	0	(30)
f. vested termination	(3)	0	3	0
g. new QDRO	0	2	0	2
h. net changes	(36)	3	3	(30)
3. New firefighters	34 [2]	0	0	34
4. As of September 30, 2020	223	75 [3]	13	311

[1] Includes four alternate payees according to the terms of a QDRO for a retired member.
[2] Includes 39 new hires minus five John Does included in the September 30, 2018 count to represent new hires shortly after that date.
[3] Includes six alternate payees according to the terms of a QDRO for a retired member.

Exhibit 4

Breakdown of Paid Firefighters Pensioners by Monthly Benefit Amounts as of September 30, 2020

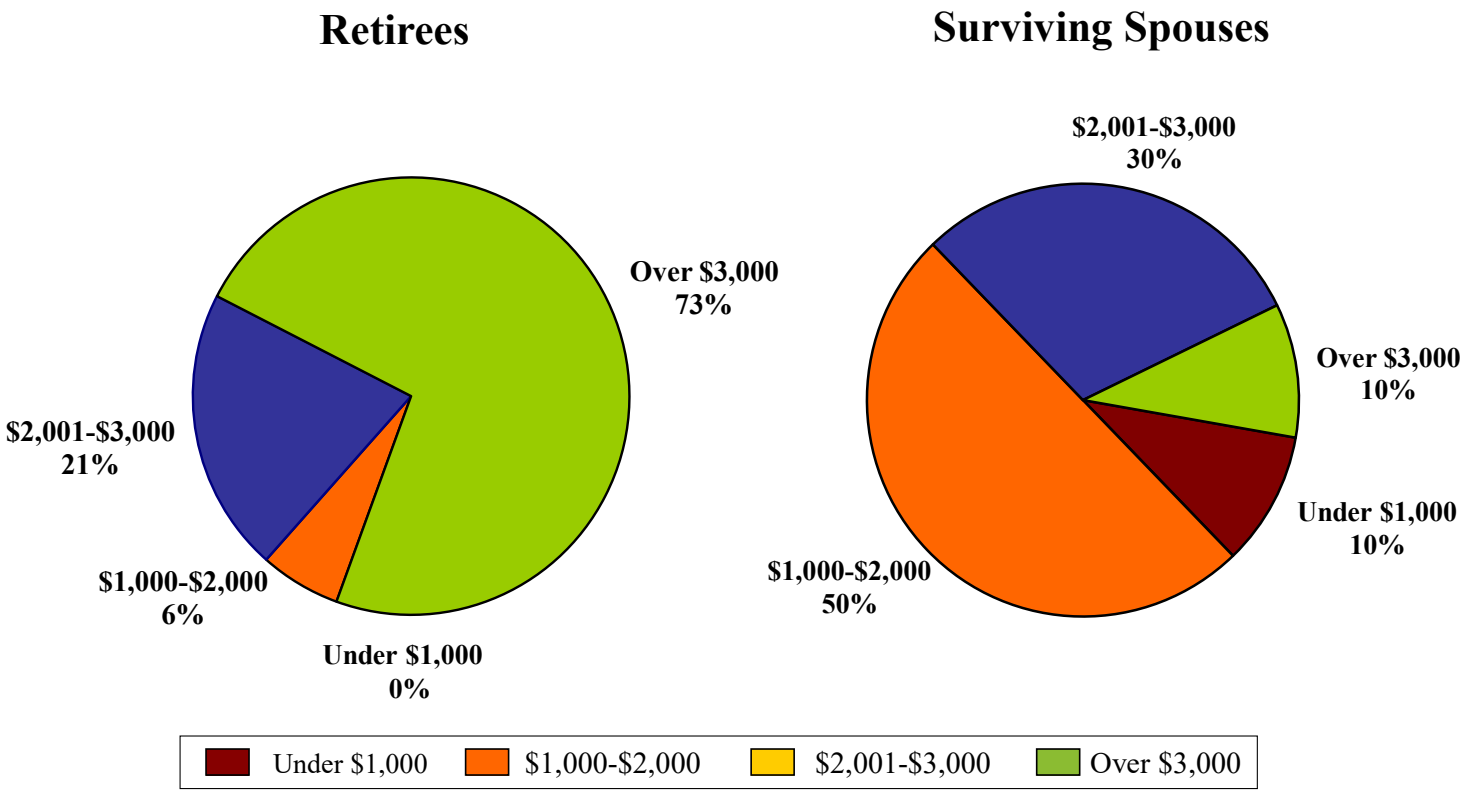


Exhibit 5

Historical Comparison of Actuarial Accrued Liability for Active Firefighters and Pensioners
(Present Plan Valuations as of September 30)

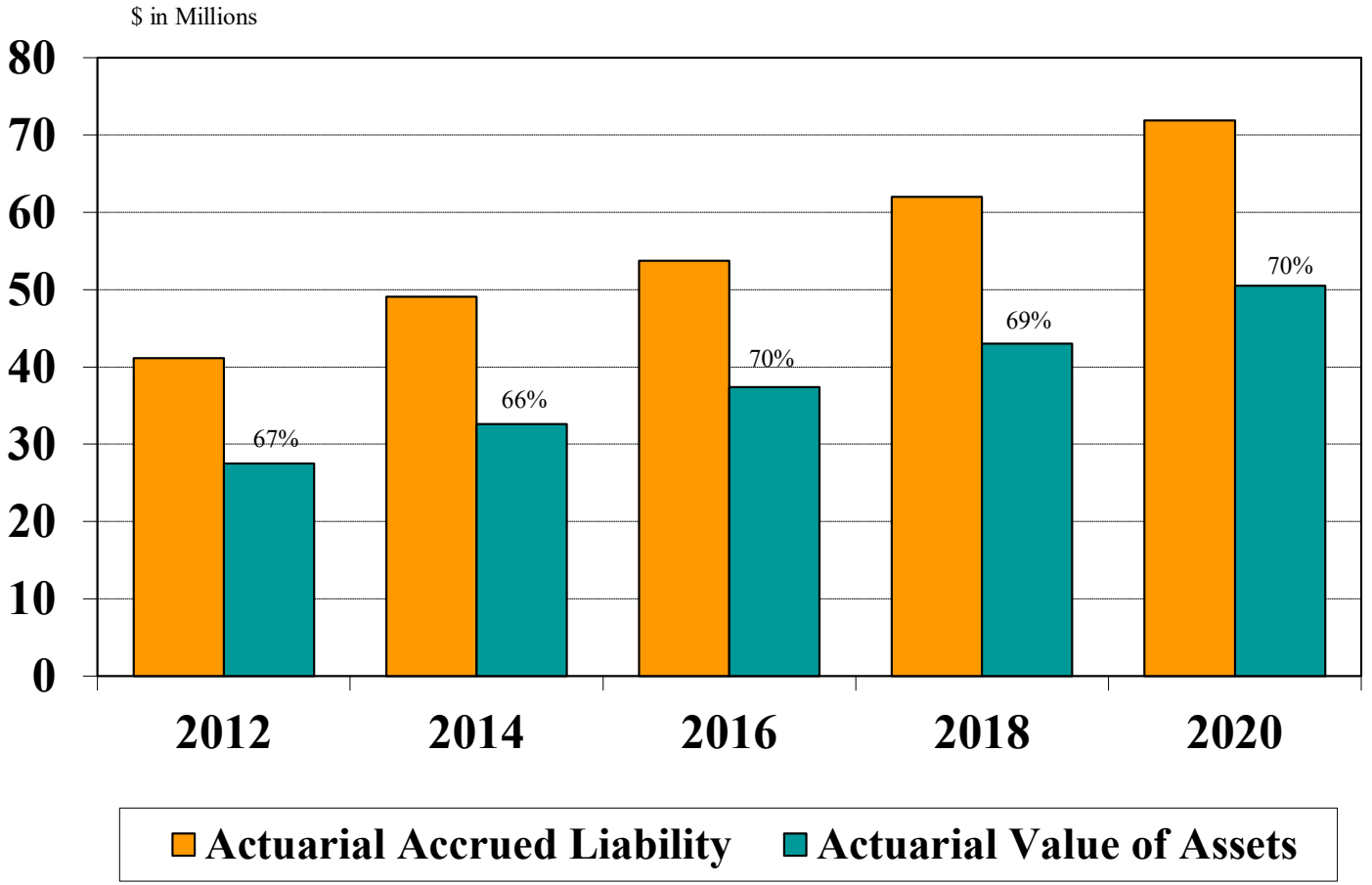


Exhibit 6

Summary of Asset Data

Asset Type	Market Value of Assets as of September 30, 2020	Allocation as a Percent of Grand Total
Domestic Equities		
Large Cap	$ 17,864,605	35.1%
Small/Mid Cap	3,103,922	6.1
Total	20,968,527	41.2
International Equities	7,390,912	14.5
Fixed Income		
Core	9,959,002	19.5
Global	1,761,245	3.5
Direct Lending	1,152,853	2.3
Bank Loan	1,378,002	2.7
Total	14,251,102	28.0
Alternatives		
Balanced Fund	2,100,637	4.1
Real Estate	2,173,716	4.3
Tactical	1,097,246	2.2
Total	5,371,599	10.6
Cash, Payables, Receivables	2,930,459	5.7
Grand Total	$ 50,912,599[1]	100.0%

[1]The grand total is the audited amount. All of the investment amounts except "cash, payables, receivables" are from the September 30, 2020 report from the investment consultant. Cash is the balancing item.

Comparison of Asset Values as of the Prior and Current Actuarial Valuation Dates		
	September 30, 2018	September 30, 2020
Market Value	$43,947,221	$50,912,599
Actuarial Value	$42,970,465	$50,538,707
Actuarial Value as a Percent of Market Value	97.8%	99.3%

Exhibit 7

Statement of Changes in Audited Assets for the Years Ended September 30, 2020 and 2019

	9/30/2020	9/30/2019
Additions		
1. Contributions		
a. Employer	$ 2,013,825	$ 1,919,225
b. Employees	1,699,605	1,623,962
c. Total	$ 3,713,430	$ 3,543,187
2. Investment Income		
a. Interest and dividends	$ 1,855,992	$ 1,726,504
b. Net appreciation in fair value	3,010,457	(219,659)
c. Total	$ 4,866,449	$ 1,506,845
3. Other Additions	0	0
Total Additions	**$ 8,579,879**	**$ 5,050,032**
Deductions		
4. Benefit Payments		
a. Monthly benefits, RETRO DROP lump sums	$ 2,990,983	$ 2,514,252
b. Contribution refunds	281,270	308,581
c. Total	$ 3,272,253	$ 2,822,833
5. Expenses		
a. Direct investment-related	$ 149,812	$ 191,130
b. General administrative	107,111	121,394
c. Total	$ 256,923	$ 312,524
Total Deductions	**$ 3,529,176**	**$ 3,135,357**
Net Increase in Assets	**$ 5,050,703**	**$ 1,914,675**
Market Value of Assets (Fiduciary Net Position)		
Beginning of Year	$ 45,861,896	$ 43,947,221
End of Year	$ 50,912,599	$ 45,861,896
Rate of Return		
Net of All Expenses	10.00%	2.70%
Net of Investment-Related Expenses	10.25%	2.97%
Gross	10.59%	3.41%
Direct Investment-Related Expenses	0.34%	0.44%

Exhibit 8

Development of Actuarial Value of Assets

Calculation of Actuarial Investment Gain/(Loss) Based on Market Value for Plan Years Ending September 30				
	2020	2019	2018	2017
1. Market Value of Assets as of Beginning of Year	$ 45,861,896	$ 43,947,221	$ 39,884,563	$ 35,342,830
2. Firefighter Contributions	1,699,605	1,623,962	1,538,179	1,585,161
3. City Contributions	2,013,825	1,919,225	1,817,845	1,873,368
4. Benefit Payments and Administrative Expenses[1]	(3,379,364)	(2,944,227)	(2,879,315)	(3,520,571)
5. Expected Investment Return[2]	3,452,170	3,318,503	3,109,526	2,736,665
6. Expected Market Value of Assets as of End of Year	$ 49,648,132	$ 47,864,684	$ 43,470,798	$ 38,017,453
7. Actual Market Value of Assets as of End of Year	50,912,599	45,861,896	43,947,221	39,884,563
8. Actuarial Investment Gain/(Loss)	$ 1,264,467	$ (2,002,788)	$ 476,423	$ 1,867,110
9. Market Value Rate of Return Net of Expenses	10.25%	2.97%	8.94%	13.04%
10. Rate of Actuarial Investment Gain/(Loss)	2.75%	(4.53)%	1.19%	5.29%

[1] Administrative expenses are included because the investment return assumption was net of investment-related expenses for all four years.
[2] Assuming uniform distribution of contributions and payments during the plan years; actuarially assumed investment return of 7.75% for 2017 and 2018 and 7.5% for 2019 and 2020.

Plan Year	Investment Gain/(Loss)	Deferral Percentage	Deferred Gain/(Loss) as of 9/30/2020
2020	$ 1,264,467	80%	$ 1,011,574
2019	(2,002,788)	60%	(1,201,673)
2018	476,423	40%	190,569
2017	1,867,110	20%	373,422
Total			$ 373,892

Actuarial Value of Assets as of September 30, 2020	
11. Market Value of Assets as of September 30, 2020	$ 50,912,599
12. Deferred Gain/(Loss) to be Recognized in Future	373,892
13. Preliminary Value (Item 11 – Item 12)	$ 50,538,707
14. Corridor for Actuarial Value of Assets	
a. 80% of Market Value as of September 30, 2020 (minimum)	$ 40,730,079
b. 120% of Market Value as of September 30, 2020 (maximum)	$ 61,095,119
15. Actuarial Value as of September 30, 2020	$ 50,538,707
16. Write Up/(Down) of Assets (Item 15 – Item 11)	$ (373,892)

Exhibit 9

Historical Comparison of Market and Actuarial Value of Assets (Valuation as of September 30)

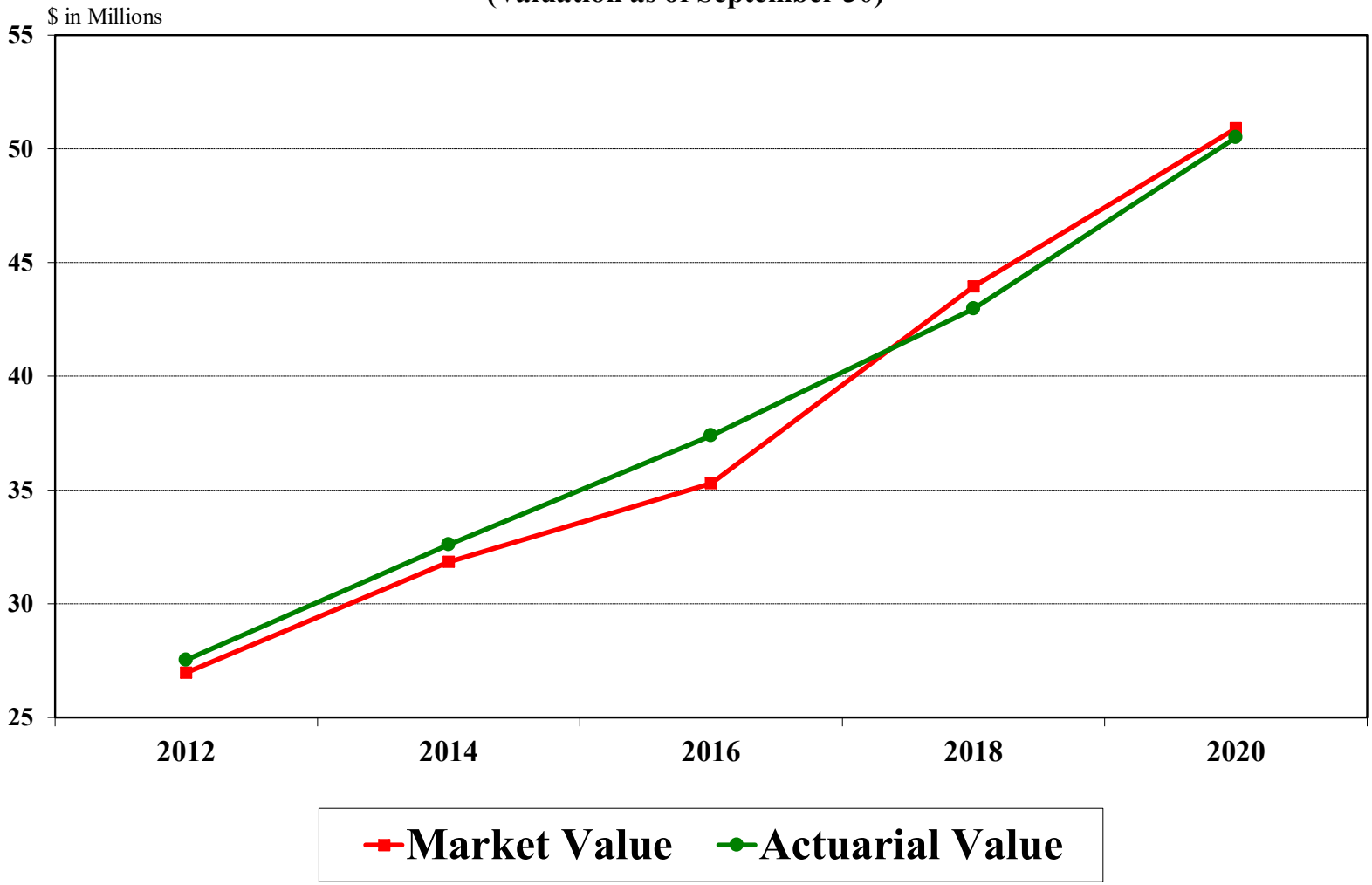
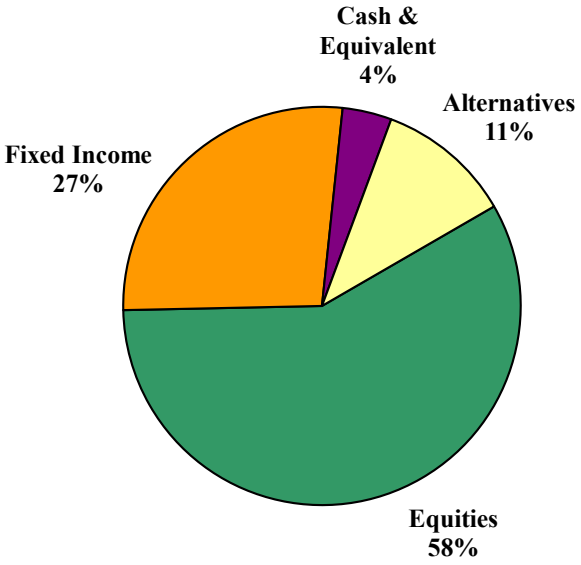


Exhibit 10

Comparison of Market Value Asset Investment Allocation as of the Prior and Current Actuarial Valuation Dates

September 30, 2018



September 30, 2020

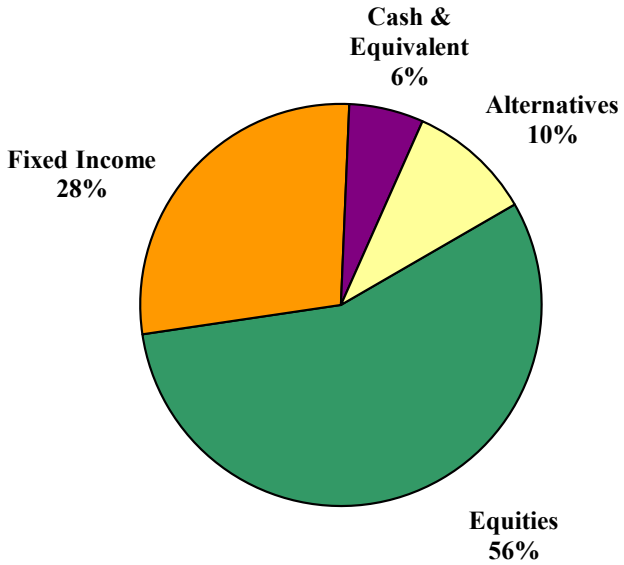


Exhibit 11

Actuarial Methods and Assumptions

A. Actuarial Methods

1. Actuarial Cost Method

The Entry Age Actuarial Cost Method is an actuarial cost method in which the actuarial present value of projected benefits of each active firefighter included in the valuation is allocated as a level percentage of compensation over the period from age at hire to the last age before 100% assumed retirement. Each active firefighter's normal cost is the current annual contribution in a series of annual contributions which, if made throughout the firefighter's total period of employment, would fund his expected benefits. Each firefighter's normal cost is calculated to be a constant percentage of his expected compensation in each year of employment. The normal cost for the fund is the sum of the normal costs for each active firefighter for the year following the valuation date. The normal cost as a percent of payroll reflects that contributions are made biweekly.

The fund's actuarial accrued liability is the excess of the actuarial present value of projected benefits over the actuarial present value of all future remaining normal cost contributions. The unfunded actuarial accrued liability (UAAL) is the amount by which the actuarial accrued liability exceeds the actuarial value of assets. The UAAL is recalculated each time a valuation is performed. Experience gains and losses, which represent deviations of the UAAL from its expected value based on the prior valuation, are determined at each valuation and are amortized as part of the newly calculated UAAL.

2. Amortization Method

The UAAL is assumed to be amortized with level percentage of payroll contributions (total assumed contribution rate less normal cost contribution rate) based on assumed payroll growth of 2.75% per year. The actuarial determination of the amortization period reflects that contributions are made biweekly.

3. Actuarial Value of Assets Method

All assets are valued at market value with an adjustment made to uniformly spread actuarial gains or losses (as measured by actual market value investment return vs. expected market value investment return) over a five-year period. The total adjustment amount shall be limited as necessary such that the actuarial value of assets shall not be less than 80% of market value nor greater than 120% of market value. See Exhibit 8.

B. Actuarial Assumptions

As a part of each actuarial valuation, we review the actuarial assumptions used in the prior actuarial valuation. The investment return assumption is reviewed using the building block approach that includes one or more asset allocations, assumed real rates of return for each asset class, an assumed rate of investment-related expenses, and an assumed rate of inflation, with all assumptions for the long-term future. Our economic assumptions are influenced both by long-term historical experience and by future expectations of investment consultants and economists, but we select the economic assumptions and usually discuss them with the board before completing the actuarial valuation.

We review the termination and retirement experience since the prior valuation and periodically look back more than two years. We also periodically review the average salaries by years of service to get insights into the promotion, step, and longevity compensation patterns for the purpose of reviewing our compensation increase assumption. For the mortality assumptions, we use an appropriate published mortality table with projections for improvement beyond the valuation date. We are guided in our review and selection of assumptions by the relevant actuarial standards of practice. As a result of our review, we have selected actuarial assumptions we consider to be reasonable and appropriate estimates of future experience for the system for the long-term future.

1. Investment Return

   7.25% per year net of investment-related expenses.

2. Inflation

   2.75% per year included in compensation increases and investment return assumptions.

3. Mortality Rates

   PubS-2010 (safety employees) below-median income tables for employees and for retirees, projected for mortality improvement generationally using the projection scale MP-2018.

4. Compensation Increases

   General increases of 2.75% per year combined with promotion, step, and longevity increases that average 1.97% per year over a 30-year career. See Exhibit 12.

5. Retirement Rates

Age	Rate per Year for Paid Firefighters Eligible to Retire
50-51	30%
52-55	15
56-69	25
70	100

The average expected retirement age for firefighters not yet eligible to retire based on these rates is 55.2.

6. RETRO DROP Election

a. Percent of firefighters eligible electing RETRO DROP: 90% of service retirements eligible to elect at least a 12-month lump sum.

b. Months assumed for lump sum: Maximum they are eligible for, up to 24 months.

7. Termination Rates

See Exhibit 12.

8. Disability Rates

See Exhibit 12. The on-duty and off-duty rates are each 50% of the total rate at each age.

9. Reduction in Benefit after 2½ Years of Disability Retirement

15% weighted average reduction in benefit.

10. Percent Married

80% of the firefighters are assumed to be married at retirement, disability, or death while employed, with male firefighters having a spouse three years younger and female firefighters having a spouse three years older.

11. Payment Form for Retirement Benefits Due to Service Retirement, Disability Retirement, or Vested Termination

    - Joint and 2/3 to surviving spouse for the 80% assumed to be married
    - Life annuity for the 20% assumed to be single

    To the extent optional forms of payment are elected and the amounts are determined under an actuarial basis which differs from the basis used in the valuation, actuarial gains or losses will occur. These gains or losses are expected to be very small and will be recognized through the valuation process for those retiring since the prior valuation who made an optional election.

12. Surviving Child's Death Benefit

    None are assumed as a result of future deaths.

13. Firefighters' Contribution Rate

    11% of covered pay.

14. City's Assumed Contribution Rate

    15% of covered payroll for firefighters over the UAAL amortization period.

15. Covered Payroll for First Year Following Valuation Date

    In general, actual (or annualized) pay for 2020 increased by 2.12% for each fire rescue officer and 10.3% for each captain chief to reflect the pay increases effective in October 2020.

16. Administrative Expenses

    The expenses paid by fund assets for other than investment-related expenses are assumed to be 0.80% of payroll. The normal cost rate as a percent of payroll is assumed to be 0.80% of payroll higher to reflect these expenses.

17. Increase in Future Pay-Related Benefits Due to Definition of Average Salary

    - 0.50%
    - an additional increase in projected average salary for ten firefighters based on deployment pay received from April 2016 through October 2018

Exhibit 12

Disability and Termination Rates per 1,000 Active Members
Compensation Increases by Years of Service

Disability Rates[1]		Termination Rates		Compensation Increases	
Attained Age	Rate per 1,000	Years of Service	Rate per 1,000	Years of Service	Increase Percent
20	0.14	0	89	1	8.92%
21	0.15	1	80	2	8.92
22	0.16	2	71	3	8.92
23	0.17	3	63	4	8.92
24	0.18	4	55	5	8.92
25	0.19	5	47	6	6.86
26	0.21	6	41	7	6.86
27	0.23	7	36	8	6.86
28	0.25	8	32	9	6.86
29	0.28	9	29	10	6.86
30	0.31	10	25	11	4.81
31	0.35	11	21	12	4.81
32	0.40	12	18	13	4.81
33	0.45	13	16	14	4.81
34	0.49	14	14	15	4.81
35	0.52	15	14	16	2.75
36	0.54	16	14	17	2.75
37	0.57	17	12	18	2.75
38	0.62	18	11	19	2.75
39	0.73	19	11	20	2.75
40	0.92	20 & Over	0	21	2.75
41	1.14			22	2.75
42	1.32			23	2.75
43	1.48			24	2.75
44	1.73			25	2.75
45	2.09			26	2.75
46	2.55			27	2.75
47	2.98			28	2.75
48	3.34			29	2.75
49	3.62			30	2.75
50	3.79			31	2.75
51	3.92			32	2.75
52	4.04			33	2.75
53	4.24			34	2.75
54	4.56			35	2.75
55	0.00			36	2.75
56	0.00			37	2.75
57	0.00			38	2.75
58	0.00			39	2.75
59	0.00			40	2.75

[1] The on-duty and off-duty rates are each 50% of the total rate shown at each age.

Exhibit 13

Definitions

1. Actuarial Accrued Liability	That portion, as determined by the particular actuarial cost method used, of the Actuarial Present Value of future pension plan benefits as of the Valuation Date that is not provided for by the Actuarial Present Value of future Normal Costs.
2. Actuarial Assumptions	Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, termination, disablement and retirement; changes in compensation; rates of investment earnings and asset appreciation; and other relevant items.
3. Actuarially Equivalent	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
4. Actuarial Gain (Loss)	A measure of the difference between actual experience and that expected based on the Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with the particular actuarial cost method used.
5. Actuarial Present Value	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date (the Valuation Date) by the application of the Actuarial Assumptions.
6. Actuarial Valuation	The determination, as of a Valuation Date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets and related Actuarial Present Values for a pension plan.
7. Actuarial Value of Assets	The value of cash, investments and other property belonging to a pension plan, as determined by a method and used by the actuary for the purpose of an Actuarial Valuation.

8. Entry Age Actuarial Cost Method	An actuarial cost method under which the Actuarial Present Value of the Projected Benefits of each individual included in the Actuarial Valuation is allocated as a level percentage of earnings between age at hire and last age before 100% assumed retirement. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a Valuation Date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability. Under this method, Actuarial Gains (Losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.
9. Plan Year	A 12-month period beginning October 1 and ending September 30.
10. Normal Cost	That portion of the Actuarial Present Value of pension plan benefits that is allocated to a valuation year by the actuarial cost method.
11. Projected Benefits	Those pension plan benefit amounts that are expected to be paid at various future times according to the Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future qualified service.
12. Overfunded Actuarial Accrued Liability	The excess, if any, of the Actuarial Value of Assets over the Actuarial Accrued Liability.
13. Unfunded Actuarial Accrued Liability	The excess, if any, of the Actuarial Accrued Liability over the Actuarial Value of Assets.
14. Valuation Date	The date upon which the Normal Cost, Actuarial Accrued Liability and Actuarial Value of Assets are determined. Generally, the Valuation Date will coincide with the end of a Plan Year, but it does not have to coincide.
15. Years to Amortize the Unfunded Actuarial Accrued Liability	The period is determined in each Actuarial Valuation as the number of years, beginning with the Valuation Date, to amortize the Unfunded Actuarial Accrued Liability with a level percent of payroll that is the difference between the expected total contribution rate and the Normal Cost contribution rate.

Exhibit 14

Summary of Present Plan

1.	Monthly Retirement Benefit for Firefighters as a Percentage of Highest 60-Month Average Salary	
	(a) For service and duty-related disability retirement benefit	58.40%
	(b) For duty-related death benefit to surviving spouse	38.93%
2.	Additional Monthly Retirement Benefit for Firefighters as a Percentage of Highest 60-Month Average Salary for Each Year of Service in Excess of 20 Years of Service	
	(a) For service and duty-related disability retirement benefit	2.275%
	(b) For duty-related death benefit to surviving spouse	1.517%
3.	Service Retirement Eligibility for Firefighters	Age 50 and 25 Years or Age 55 and 20 Years
4.	Retroactive Deferred Retirement Option Plan (RETRO DROP) provides a reduced monthly benefit and a lump sum	
	(a) Earliest RETRO DROP benefit calculation date	3.5 Years after Service Retirement Eligibility
	(b) Maximum RETRO DROP benefit accumulation period	24 Months
	(c) Earliest employment termination date with maximum RETRO DROP benefit accumulation period	Age 55.5 and 30.5 Years or Age 60.5 and 25.5 Years
	(d) RETRO DROP lump sum includes	
	(i) monthly benefits that would have been received between RETRO DROP benefit calculation date and termination of employment,	
	(ii) accumulated contributions made by the firefighter after the RETRO DROP benefit calculation date, and	
	(iii) no interest	
5.	Vested Termination Benefit	
	(a) Eligibility for firefighters	10 years
	(b) Percent vested with 10 years	50%
	(c) Additional percent vested for each year above 10 years	5%
	(d) Percent vested with 20 or more years	100%
	(e) Benefit is deferred to date person would have satisfied service retirement eligibility date	
	(f) Benefit is percent vested times service retirement benefit	

6. Disability Retirement Monthly Benefit for Firefighters Who Become Totally Disabled as a Result of Duties as a Firefighter
   (a) The benefit is (i) plus (ii) for the initial 30-month period if not able to perform job in fire department with equal or greater pay than before becoming disabled
      (i) Minimum monthly amount based on 20 years in 1(a)
      (ii) Additional monthly amount per year of service in excess of 20 years in 2(a)
   (b) Following the initial 30-month period, the status is periodically reviewed, and the benefit may be continued in full, reduced by half, or terminated, depending upon whether the member is able to perform any work for which he is reasonably suited by education, training, and experience.
   (c) Upon attaining eligibility for normal retirement, the member's vested retirement benefit becomes payable if the disability benefit has been reduced or terminated

7. Monthly Duty-Related Death Benefit for Children of Firefighters as a Percentage of Highest 60-Month Average Salary
   (a) Where the spouse is receiving a benefit — 7.79%
   (b) Where the spouse is not receiving a benefit or there is no spouse — 38.93%

8. Contributions As a Percentage of Pay by:
   (a) Firefighters — 11.00%
   (b) City of Killeen — 15.00%

9. Monthly Benefits for Volunteer Firefighters[1]
   (a) Service retirement benefit — $155.00
   (b) Duty-related disability retirement benefit — $155.00
   (c) Duty-related spouse survivor benefit — $105.00
   (d) Duty-related child survivor benefit:
      i. Where the spouse is receiving a benefit — $37.20
      ii. Where the spouse is not receiving a benefit — $105.00

10. Service Retirement Eligibility for Volunteer Firefighters[1] — Age 55 and 20 Years

11. Vested Terminated Benefit Eligibility for Volunteer Firefighters[1] (Benefit Deferred to Age 55) — 20 Years

12. A prorated benefit is provided for firefighters with both paid and volunteer service.[1]

13. The normal form of annuity payment at retirement is a Joint and Two-Thirds to Surviving Spouse, and payment is the last day of each month. A Joint and 75% to Surviving Spouse Option and Joint and 100% to Surviving Spouse Option are available as optional forms of a service retirement benefit. A Social Security Leveling Option is also available.

14. Off-duty death benefits are provided for paid firefighters with more than 20 years of service with the same formula as for a duty-related death [Items 1(b) and 2(b)].

[1] The city discontinued using volunteers beginning in the second half of 2016.

15. Salary used to determine the Highest 60-Month Average Salary for paid firefighters includes regular pay, longevity and overtime pay and excludes (a) a lump sum distribution upon termination for unused sick leave or vacation and (b) deployment pay after January 1, 2019 for disaster response services outside of the City of Killeen. The average is based on the highest 130 biweekly pay periods during active participation in the fund or before the RETRO DROP benefit calculation date.

16. Refund of firefighters' accumulated contributions without interest will be made to firefighters who terminate employment and either are not eligible for any other benefit from the fund or request a refund from the fund.

Appendix A

Review of the Actuarial Economic Assumptions for the September 30, 2020 Actuarial Valuation

Section 1. Asset Allocation and Investment Return Assumption Development

	Gross Annual Real Rate of Investment Return (ROR)[1]	Estimated Investment Expenses[2]	Net Real ROR	Asset Allocation 9/30/20 Actual[3]	Asset Allocation Current Target
Equities					
Domestic large cap blend	6.5%	0.16%	6.34%	18.3%	15.0%
Domestic large cap value	6.5	0.78	5.72	6.9	7.5
Domestic large cap growth	6.5	0.77	5.73	9.9	7.5
Domestic small/mid cap	7.0	0.22	6.78	6.1	10.0
International developed value	7.0	0.56	6.44	7.0	7.5
International developed growth	7.0	0.61	6.39	7.5	7.5
				55.7	55.0
Fixed Income					
Domestic core plus	2.5	0.55	1.95	19.5	18.5
Global	2.5	0.78	1.72	3.5	4.0
Direct lending	3.0	1.47	1.53	2.3	2.5
Bank loan	3.0	0.85	2.15	2.7	3.0
				28.0	29.0
Alternatives					
Real estate	5.0	1.37	3.63	4.3	7.5
Balanced fund	3.5	0.65	2.85	4.1	4.0
Tactical strategies	8.5	1.37	7.13	2.2	3.5
				10.6	16.0
Cash	0.5	0.22	0.28	5.7	2.0
				100.0%	100.0%
Weighted Average Net Real ROR Assumption				4.45%	4.62%
Possible Theoretical Annual Investment Return Assumption (Total Net Annual ROR) – Net Real ROR Plus Assumed Annual Rate of Inflation					
Assumed 3.00% Inflation				7.45%	7.62%
Assumed 2.75% Inflation				7.20%	7.37%

[1] A gross annual real rate of investment return is the total annual rate of investment return, before any expenses, that is in excess of the assumed annual inflation rate. These are long-term assumptions made by Rudd and Wisdom, Inc.

[2] These assumed investment-related expenses are primarily based on information from AndCo Consulting as of September 30, 2020 for both direct and indirect expenses, with an addition of 0.12% for bank and investment consultant fees.

[3] This allocation is from AndCo Consulting's September 30, 2020 performance review and report and adjusted to reflect total assets from audited financial statement with cash as the balancing item.

Appendix A (continued)

Section 2. Price Inflation in the USA
Average Annual Rates of Increase in the CPI-U

Years (Dec. to Dec.)	Number of Years	Average Annual Increase
1955 – 2020	65	3.56%
1960 – 2020	60	3.68
1965 – 2020	55	3.90
1970 – 2020	50	3.83
1975 – 2020	45	3.50
1980 – 2020	40	2.80
1985 – 2020	35	2.51
1990 – 2020	30	2.25
1995 – 2020	25	2.14
2000 – 2020	20	2.04

Most inflation forecasts are for 10 years or less. For example, the average 10-year forecast in the June 2021 Livingston Survey published by the Federal Reserve Bank of Philadelphia was 2.50%. However, 10 years is too short a forecast period for a public employee defined benefit pension plan. In the 2021 annual report of the OASDI Trust Funds (Social Security), the ultimate inflation assumptions for their 75-year projections are 3.0%, 2.4%, and 1.8% for the low-cost, intermediate, and high-cost assumptions, respectively. Looking at the average annual increase in the CPI-U over historical periods of 30 to 65 years above and considering the Social Security forecasts, we believe that reasonable assumed rates of inflation for the long-term future would range from 2.25% to 3.25%. Shorter term considerations make the bottom half of that range more desirable.

Section 3. Administrative Expenses Paid by the Fund

Plan Year Ending 9/30 (1)	Administrative Expenses Paid by the Fund (2)	Covered Payroll (3)	% of Payroll (2) ÷ (3) (4)
2020	$107,111	$15,450,955	0.69%
2019	121,394	14,763,291	0.82
2018	96,351	13,983,445	0.69
2017	136,910	14,410,555	0.95
2017-2020	$461,766	$58,608,246	0.79%

The administrative expenses are not reflected in the investment return assumption but are reflected as a percent of payroll that is added to the normal cost contribution rate. For the September 30, 2020 actuarial valuation, we recommend 0.80%, which is the rounded-up average developed above for the last four plan years. This is somewhat lower than the assumption of 0.85% used in the September 30, 2018 actuarial valuation. (The covered payroll was determined as the firefighter contributions for the plan year divided by the firefighter contribution rate during the plan year.)

Appendix A (continued)

Section 4. Comparison of 9/30/2018 Actuarial Economic Assumptions with 9/30/2020 Actuarial Economic Assumptions

Actuarial Assumption[1]	9/30/2018 Actuarial Economic Assumptions	9/30/2020 Actuarial Economic Assumptions
Inflation (Price)	3.00%	2.75%
Net real rate of return[2]	4.50	4.50
Net total investment return[2]	7.50%	7.25%
Firefighter pay increase[3]	4.97%	4.72%
Aggregate payroll increase	3.00%	2.75%
Admin. expenses (% of payroll)	0.85%	0.80%

[1] All assumptions are annual rates.
[2] Net of all investment-related expenses.
[3] For 9/30/2018, a 3% annual general compensation increase combined with promotion, step, and longevity pay increases that vary by length of service (highest in early years) and average 1.97% per year over a 30-year career. For 9/30/2020, a 2.75% annual general pay increase combined with promotion, step, and longevity pay increases that average 1.97% per year over a 30-year career.